

Alexander Chaushev

Department of Physics and Astronomy,
University of California Irvine,
Irvine, CA 92697, USA.

Website: apch.io
Email: a.chaushev@uci.edu

Employment

Postdoctoral Researcher (Irvine, California) **January 2021 to Present**

- Developing a kernel phase interferometry pipeline for the CHARIS instrument on the Subaru telescope.
- Conducting a program to look for signals of on-going planet formation, both in currently known planetary candidates and potential new candidates identified during the search.
- Supervised by Prof S. Sallum

Postdoctoral Researcher (Berlin, Germany) **October 2018 to December 2020**

- Using machine learning to improve the planet yield of the NGTS survey.
- Developing techniques to detrend the data and identify small planets which may have otherwise been missed.
- Using data from NGTS to search for new planets in the sub-Jovian desert.
- Conducting photometric follow-up and assisting in the discovery and publication of planets from NGTS.
- Supervised by Prof H. Rauer and Dr J. Cabrera.

Research Assistant (NGTS) (Warwick, United Kingdom) **February 2018 to July 2018**

- Responsible for preparing the first public data release for the Next Generation Transit Survey (NGTS).
- Conducted work to create data quality checks of the pipeline.
- Supervised by Prof R. West and Prof P. Wheatley

Education

University of Leicester (United Kingdom) - PhD Astrophysics **October 2013 to January 2018**

PhD Project: "Precision photometry for the Next Generation Transit Survey (NGTS)"

- Developed the NGTS calibration pipeline, producing high precision calibration frames necessary to achieve the survey aims. Additionally, helped to analyse camera performance as part of this work.
- Implemented methods to search for single transits and unusual objects using Bayesian change point detection.
- Developed tests to understand correlated noise in the data and to optimise the data pipeline performance.
- Built a difference image analysis pipeline to search for transient sources in the data.
- Undertook extensive photometric follow-up of NGTS candidates.
- Supervised by Dr M. Goad and Dr M. Burleigh.

Imperial College London (United Kingdom) - MSci Physics **October 2008 to July 2012**

Msci Project: "Stellar microvariability of solar-type stars."

- Developed tools to automatically extract rotation periods, search for differential rotation and characterise the microvariability of a sample of solar-type stars observed with the Kepler space telescope.
- Modelled the spot coverage of the stars using the conjugate gradient method (solving an inverse problem).
- Supervised by Dr Y. Unruh.

Technical Skills

Machine Learning: Experience with deep neural networks, recurrent neural networks, convolutional neural networks as well as unsupervised techniques such as clustering and PCA.

Astronomical Timeseries Analysis: Familiar with Fourier transforms, wavelet transforms, phase-dispersion minimisation, Lomb-Scargle periodograms and others common analysis techniques.

Programming: Python, matlab and C++ proficient. Comfortable with the standard scientific stack (numpy, scipy and pandas). Experience with scikit-learn and pytorch. Proficient with the git version control system.

Software Development: Experience with developing clear, easy to use and maintainable code for multiple different teams including Leicester neuroscience, the NGTS consortium and Leicester photometric follow-up team.

Observing: 7 weeks / 4 runs of photometric follow-up on the 1m at SAAO, South Africa. 2 weeks of maintenance, operations and debugging hardware issues for NGTS in Paranal, Chile.

Teaching & Supervision

Supervising a masters student, Patrick Hu, at the Berlin Institute of Technology. The masters project title is, "Searching for planets around young stars with machine learning".

Demonstrated in undergraduate computing labs for c++, python and R at the University of Leicester.

Taught undergraduate seminar classes at the University of Leicester in mathematics and core physics. Helped to explain basic physics concepts and solutions to problem sets.

Others Skills

Outreach: Conducted informal talks to general audiences and high school students on the topic of exoplanets.

Languages: Native English and Bulgarian as well as basic Spanish and Afrikaans

Sport: Basketball, bouldering and avid gym goer.
